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CORRESPONDENCE CONTROL

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00399 RF05

DUE DATE

ACTION

DIST.	LTR	ENC
BERARDINI, J.H.	X	X
BOGNAR, E.S.	X	X
BROOKS, L.		
CARPENTER, M.	X	X
CROCKETT, G. A.	X	X
DECK, C. A.	X	X
DEGENHART, K. R.	X	X
FERRERA, D. W.	X	X
GIACOMINI, J. J.		
GILPIN, H.		
LINDSAY, D. C.	X	X
LONG, J. W.		
NESTA, S.		
SHELTON, D. C.	X	X
TUOR, N. R.	X	X
WARD, D.	X	X
WIEMELT, K.	X	X
ZAHM, C.	X	X
Nininger, B	X	X
Cahle, J	X	X
COR. CONTROL	X	X
ADMIN. RECORD	X	X

Reviewed for Addressee Corres. Control RFP

8/8/05 [initials]
Date By

Ref. Ltr. #

DOE ORDER # 5400.1

Department of Energy

ROCKY FLATS PROJECT OFFICE
12101 AIRPORT WAY, UNIT A
BROOMFIELD, COLORADO 80021-2583

AUG 0 1 2005

05-DOE-00486

Mr. Carl Spreng
Rocky Flats Cleanup Agreement Project Coordinator
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80203

Mr. Mark Aguilar
Rocky Flats Team Leader
U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 500, 8WM-C
Denver, CO 80202-2405

Gentlemen:

Enclosed is a Water Quality Update to Notification for Reporting Surface-Water Monitoring Results for Chromium (Cr) at the Rocky Flats Cleanup Agreement (RFCA) Point of Evaluation GS-10. In addition, also enclosed is a sampling and analysis proposal for Cr characterization in South Walnut Creek.

The calculated 30-day moving average for total Cr triggered the reporting requirements under RFCA Attachment 5, Section 2.4(B) for the period March 23, 2005 through April 10, 2005 inclusive. As of April 11, 2005, the 30-day average for Cr has no longer been reportable. The sampling and analysis proposal designates five sampling points where data will be utilized to characterize Cr concentrations in surface water and sediments.

Please review the enclosed sampling and analysis proposal and provide comments prior to August 15, 2005 to facilitate initiation of the project activity. If you have any questions, please contact me at (303) 966-6246.

Sincerely,

John J. Rampe, Director
RFPO/Closure Project Management

Enclosure

cc w/Enc:
D. Kruchek, CDPHE
B. Nininger, K-H

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SW-A-005109

Enclosure 1

WATER-QUALITY UPDATE TO NOTIFICATION FOR REPORTABLE SURFACE-WATER MONITORING RESULTS FOR CHROMIUM AT RFCA POINT OF EVALUATION GS10 – RCN-020-05

The purpose of this letter is to provide an update to the June 22, 2005 notification of reportable concentrations of total chromium (Cr) in surface water at Rocky Flats Cleanup Agreement (RFCA) Point of Evaluation (POE) surface-water monitoring station GS10, which is located in the South Walnut Creek upstream of Pond B-1 in Walnut Creek basin. The calculated 30-day moving average for total Cr triggered the reporting requirements under RFCA Attachment 5, Section 2.4 (B) for the period March 23, 2005 through April 10, 2005 inclusive, using validated data (Figure 1; for details, see Table 1). As of April 11, 2005, the 30-day average for Cr was no longer reportable and individual sample results show a decreasing trend with the completion of Functional Channel construction in mid-April. Analytical results for all samples that were used in the calculation are listed in Table 2.

Table 1. Reportable 30-Day Average Values for RFCA POE Monitoring Location GS10 Using Validated Data.

Analyte	s of Reportable Values	Range of Reportable 30-day Avg. Values (µg/l)	Annual Volume-Weighted Average (µg/l)[1]
Total Chromium	3/23/05 – 4/10/05	50.5 – 64.7	20.0

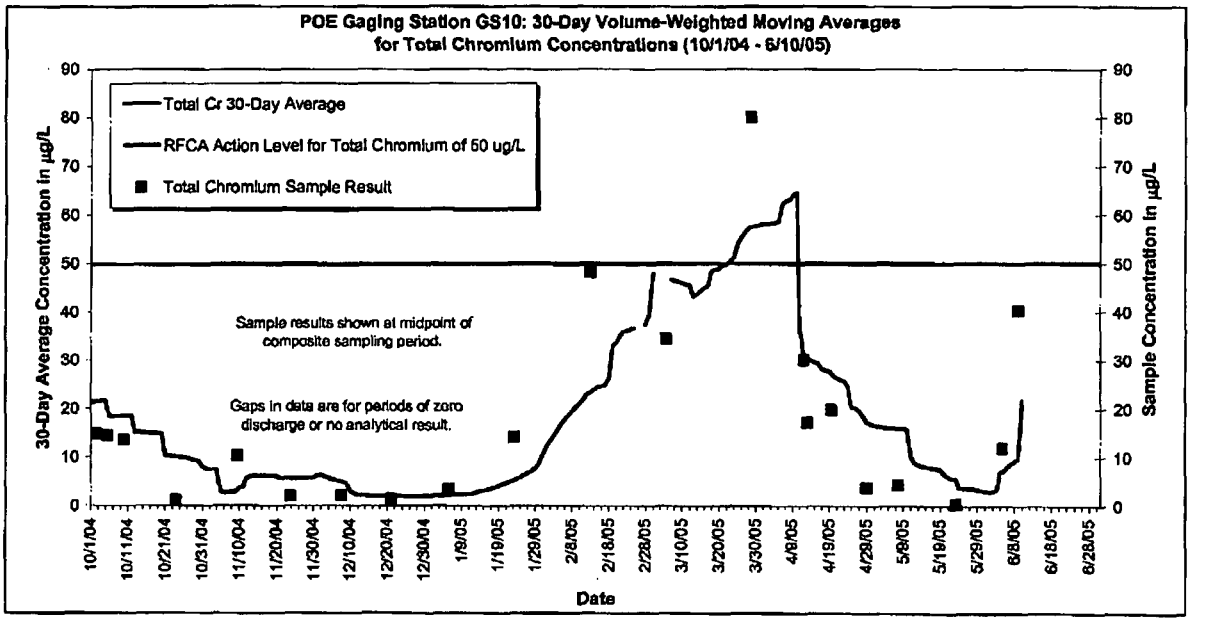

Figure 1. Calculated 30-Day Average Values and Individual Composite Sample Results at GS10: 10/1/04 – 6/10/05.

Table 2. Analytical Results for Composite Samples Collected at GS10 Used in the 30-Day Average Calculations (Validated through 3/14/2005 Sample).

nposite Sample Start Date	Total Chromium Analytical Results (µg/l)
2/1/2005	48.2
2/24/2005	34.4
3/14/2005	80.1
4/11/2005	30.1

[1] Concentration for 10/1/04 - 6/10/05.

2

Downstream Water Quality Monitoring

Water flowing through GS10 also passes through the lower B-series ponds (Ponds B-4 and B-5) and South Walnut Creek before leaving the Site. RFCA Points of Compliance (POCs) GS08 (Pond B-5 outlet) and GS03 (Walnut Cr. at Indiana St.) again monitor this water. GS10 analytical results and the reportable 30-day average values were compared with those for pre-discharge samples collected from Pond B-5 prior to the March and April/May 2005 direct discharges (3/15 – 3/31/05 and 4/30 – 5/19/05). Monitoring results from Pond B-5 (predischarge samples) met all applicable water-quality criteria prior to discharge. Composite samples collected at GS08 and GS03 are not analyzed for total Cr.

Water-Quality Evaluation

Past Cr results at GS10 show numerous values in the 10-40 µg/l range. These results generally show seasonal increases coinciding with increased spring/summer runoff rates and the corresponding increases in TSS. Figure 2 shows a fairly good correlation between increasing TSS and increasing Cr concentrations at GS10.[2] Though reportable total Cr values have been observed in WY05, the recent data do not deviate significantly from previous data. This continued correlation suggests increased Cr transport associated with increased transport of suspended solids.

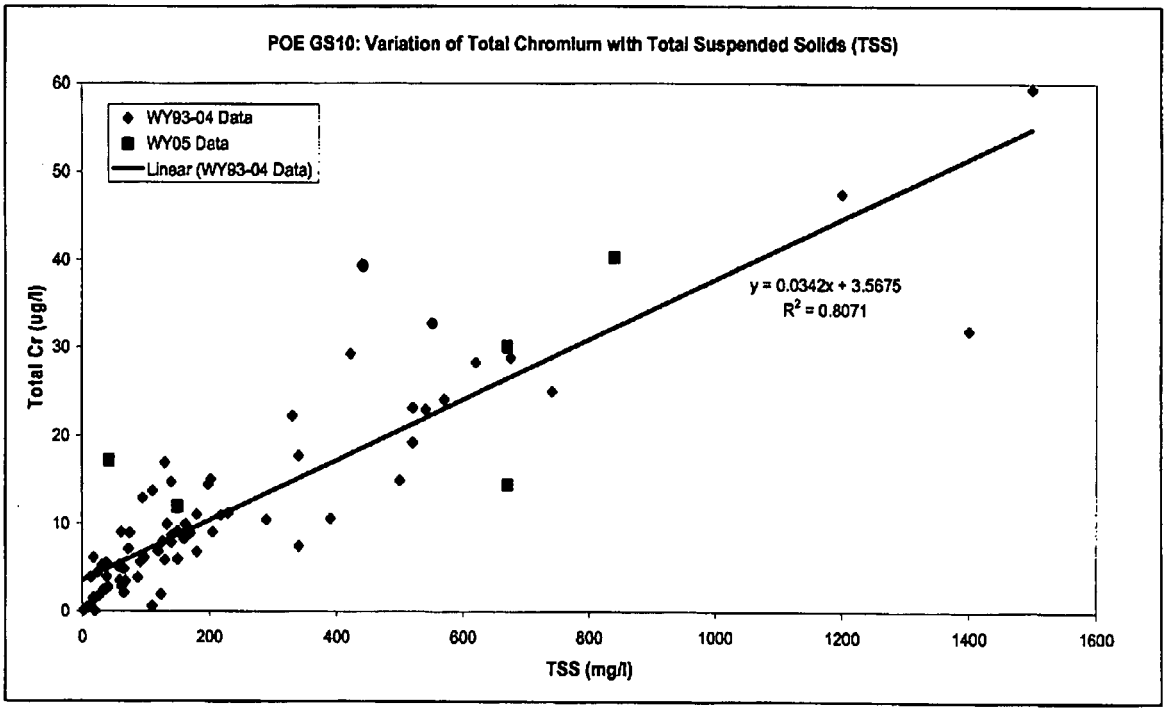

Figure 2. Variation of Total Chromium with Total Suspended Solids at GS10.

Similar relationships have been observed at other Site surface-water monitoring locations. These correlations also exist for metals such as aluminum, cobalt, copper, iron, lead, manganese, nickel, vanadium, etc. indicating that these metals are also transported at higher rates with increased sediment transport. GS40, a monitoring location upstream of GS10 sampling runoff from the central 700 Area, has shown recent increases in Cr concentration (Figure 3). These higher concentrations coincide with observations of increased solids transport from the 700 Area. Figure 4 shows a strong correlation between Cr concentration and TSS at GS40 for the limited TSS data available.

[2] TSS is only available for samples collected within the 7-day hold time for TSS analyses.

3

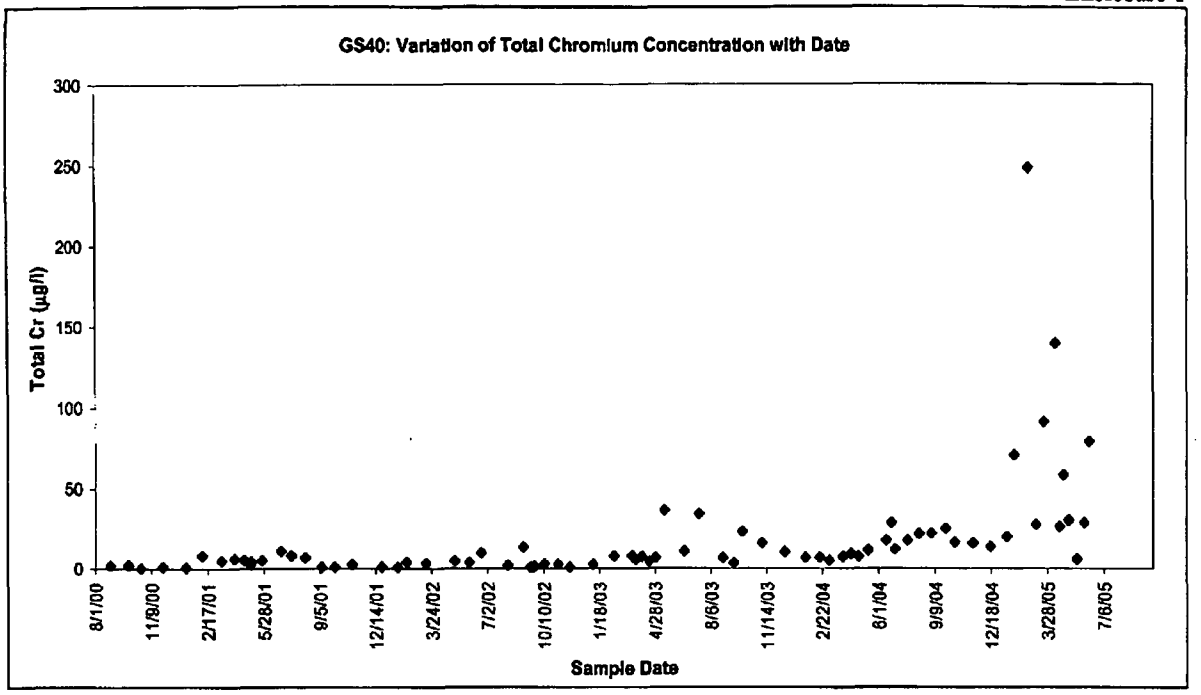

Figure 3. Variation of Total Chromium with Sample Date at GS40.

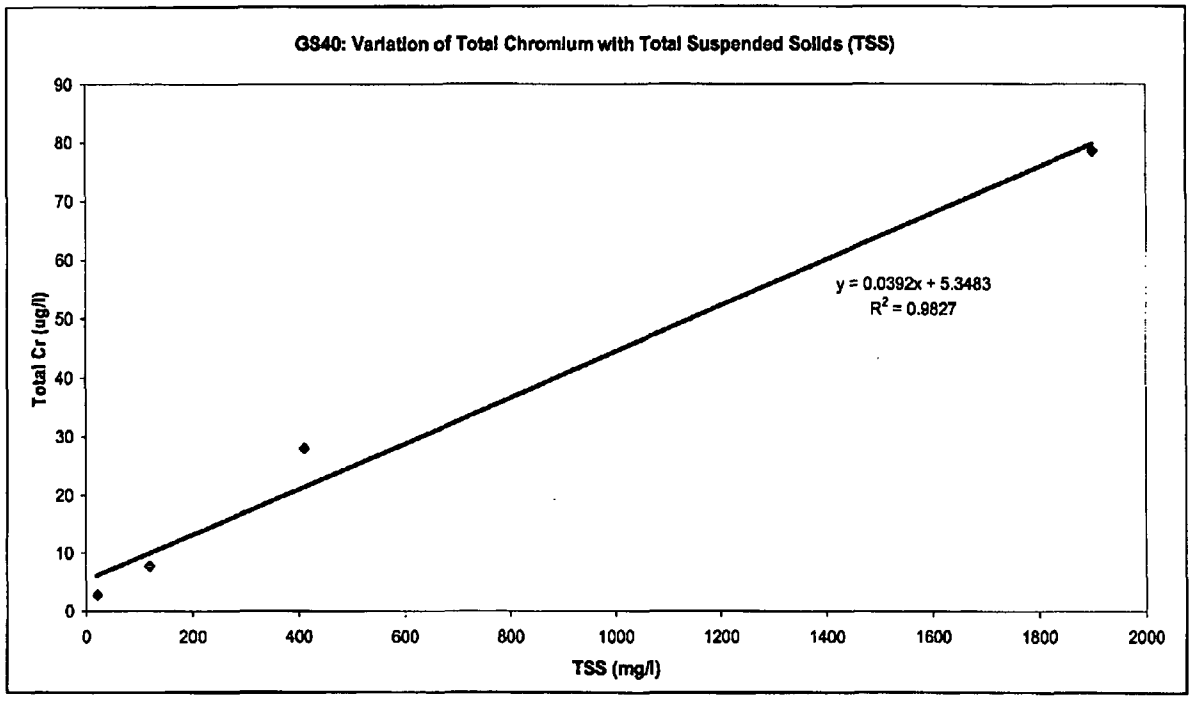

Figure 4. Variation of Total Chromium with Total Suspended Solids at GS40.

Since the majority of Cr is transported attached to suspended solids, an increase in TSS can result in corresponding increases in concentration. A significant deviation in the typical Cr concentration of the suspended solids may suggest a new source term. Figure 5 shows that the Cr concentration for the suspended solids has not significantly changed at GS10 or GS40, further suggesting increased transport of suspended solids and not a new source term.

4

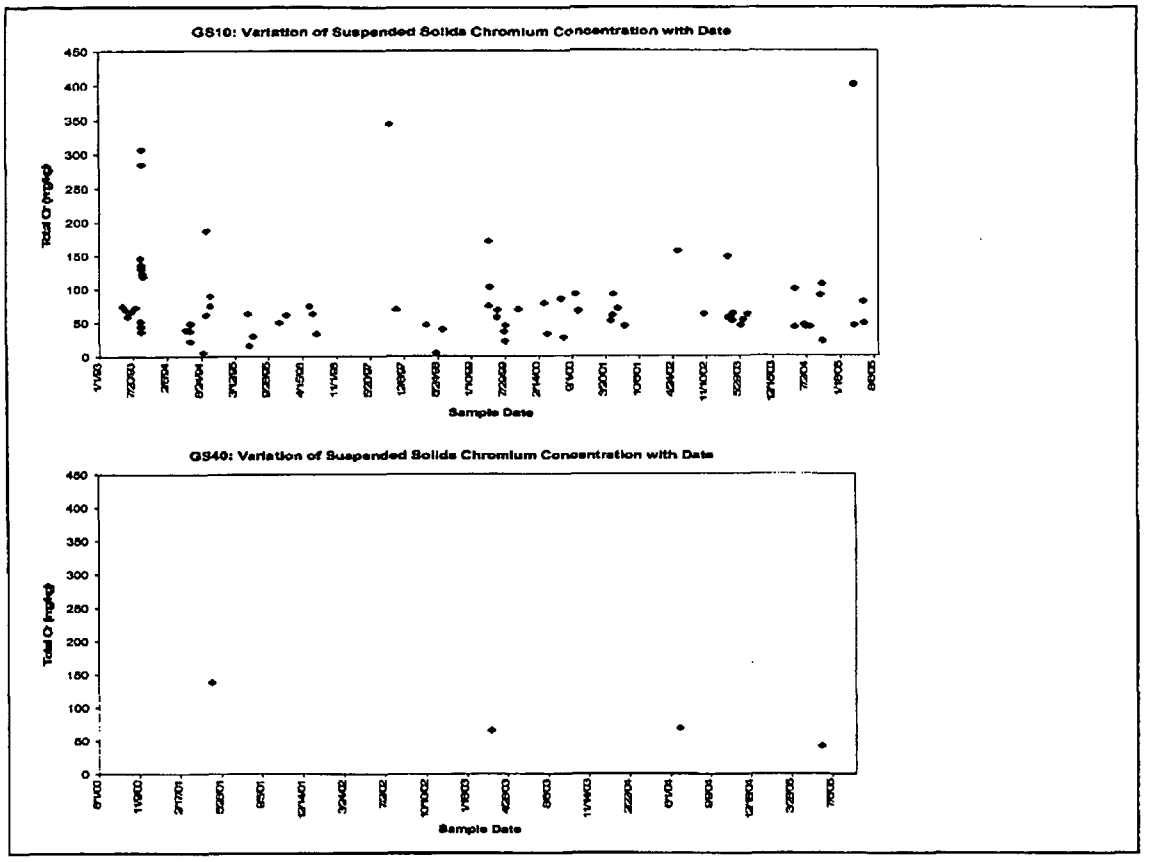

Figure 5. Temporal Variation of Suspended Solids Chromium Concentration at GS10 and GS40.

A review of Cr data for surface soil and sediment sampling locations within the GS10 drainage area generally show concentrations measurably lower than for the suspended solids data (Table 3 and Figure 6). Fractionation of both soils in surface-water runoff and Cr in soils is undoubtedly occurring. Both mechanical and physiochemical suspension mechanisms suggest preferential suspension of certain fractions of the surface soil in stormwater runoff. Fractionation may occur as a function of particle size, density, and/or surface chemistry. Furthermore, Cr may associate preferentially with certain fractions of the soil based on surface area and/or surface chemistry. The net result may be a measurably different Cr concentration of suspended material in the surface water as compared to Cr concentration for the surface soils.

Table 3. Summary Statistics for Chromium Concentrations.

	Average (mg/kg)	85th Percentile (mg/kg)
GS10 (suspended solids)	80.1	120
GS40 (suspended solids)	78.4	*
Surface Soil and Sediment	20.1	26.3

Notes: * Only four data points

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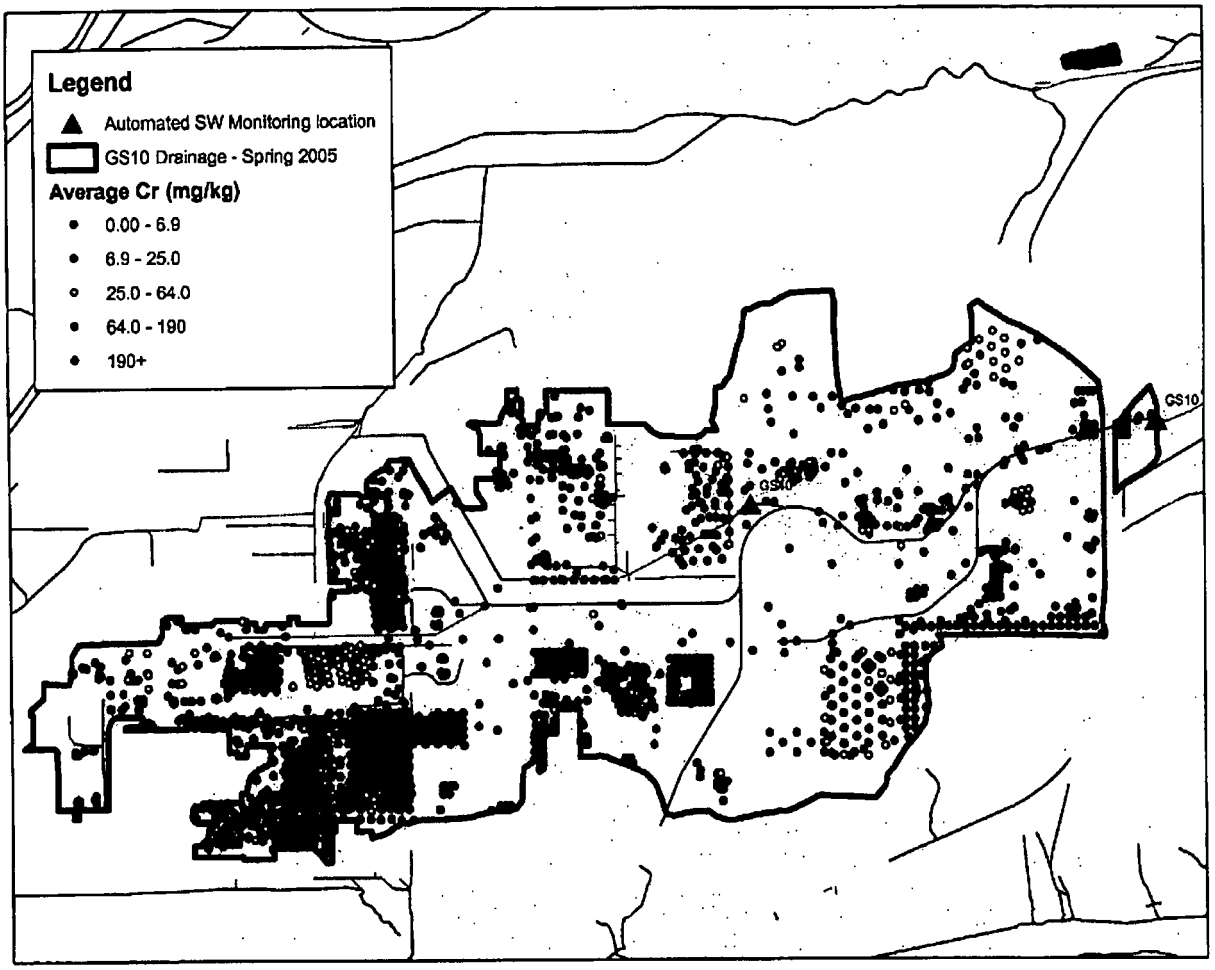

Figure 6. Average Chromium Concentrations for Surface-Soil and Sediment sampling Locations Within the GS10 Drainage.

The amount of TSS in runoff depends on a number of factors including the availability of disturbed soils (e.g. unconsolidated and unvegetated soil), storm intensity (i.e. precipitation forces), and runoff intensity (flow rates). The area upstream of GS10 has been experiencing significant soil disturbances and increased traffic loads due to the wholesale demolition of structures, construction of functional channels, culvert removals, and transport of debris in those areas. Most significantly has been the construction of Functional Channels 4 and 5 and the ongoing demolition in the 700 Area. It should be noted that the 3/14 – 4/11/05 composite sample from GS10 was collected entirely during this construction and the associated water management using coffer dams, pumps, and temporary ditches. The general trend suggests that continued use of aggressive erosion control measures is appropriate.

Recommendation

The evaluation presented above suggests that ongoing RFETS activities (i.e., Decontamination and Decommissioning and ER projects, excavations, or other routine operations) did not expose any new sources of significant Cr contamination tributary to GS10. However, significant progress towards closure has resulted in large areas of disturbed soils. Data evaluation also indicates that increases in soil/sediment transport have been occurring, resulting in temporarily increased Cr concentrations at GS10 and upstream tributary locations.

6

In consideration of the analysis given above, and the similar characteristics of this event compared to previous sample results, it is believed a comprehensive search for new source contributions is not warranted. The following is proposed in response to these reportable values at GS10:

(1) The attached proposal outlines a one-time sampling event to evaluate surface-water and sediment for Cr VI in South Walnut Creek.

(2) Continued routine monitoring as required by RFCA and the Site Integrated Monitoring Plan. Should review of subsequent data raise issues not currently being considered, additional evaluation would be necessary.

(3) Continued application and maintenance of comprehensive erosion controls and revegetation measures within the areas tributary to GS10 and other drainages.

7

Sampling and Analysis Proposal for Chromium Characterization in South Walnut Creek

Based on interest expressed by CDPHE staff, DOE and Kaiser-Hill staff suggests a simple characterization for Cr VI in South Walnut Creek. This proposal outlines a one-time sampling event to evaluate surface-water and sediment for Cr VI in South Walnut Creek.

A.1 Hydrology

All IA surface-water runoff that flows into North Walnut Creek, South Walnut Creek, or the SID is collected by a system of stormwater retention ponds. The ponds serve three main purposes for surface-water management: (1) storm water retention and settling of sediments, (2) water storage for sampling prior to release, and (3) emergency spill control in those instances where a spill cannot be adequately managed without use of the ponds.

GS10 is the POE for IA surface-water flows to South Walnut Creek. Surface water in South Walnut Creek is routed through the B-Series Ponds (Figure A - 1). Steps in the water collection and transfer process are briefly outlined as follows:

1. Runoff from the central IA flows directly to GS10;
2. Runoff from GS10 then flows downstream through conveyance structures, through Pond B-4, and then to Pond B-5 where it is detained, and;
3. Water detained in Pond B-5 is discharged periodically in batches to Walnut Creek.

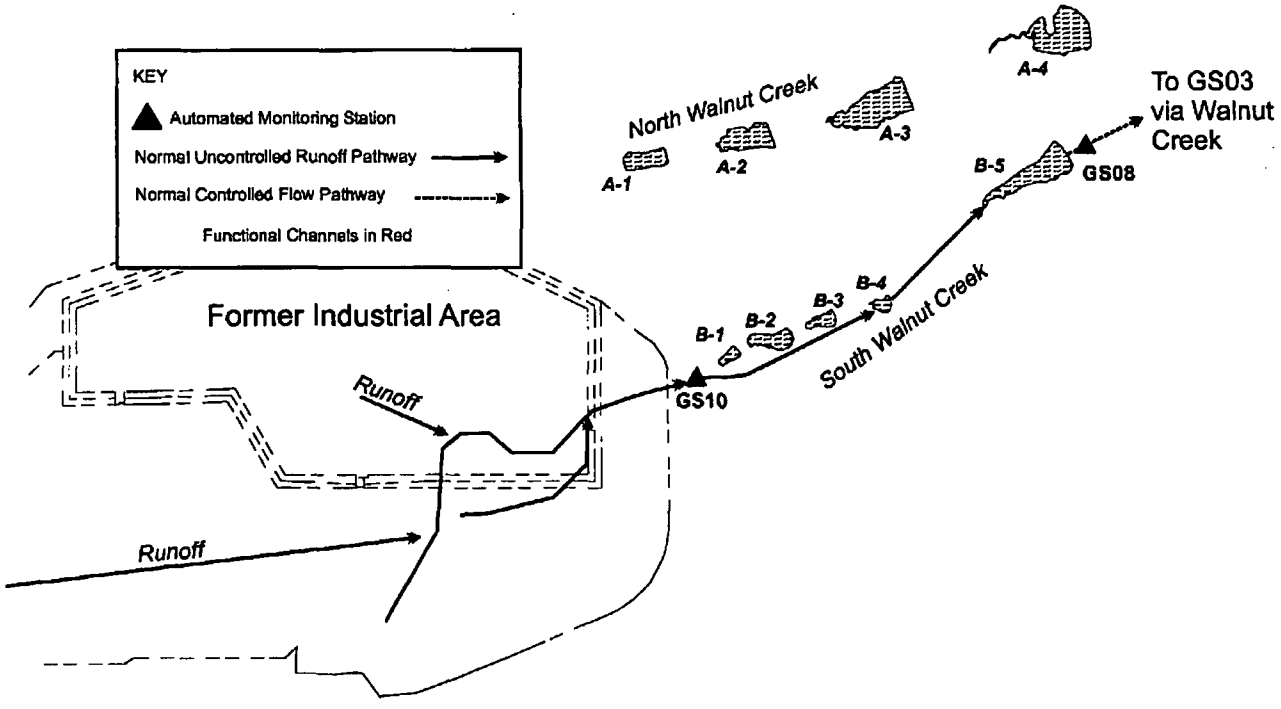

Figure A - 1. Hydrologic Routing Diagram for POE GS10 (WY05-06).

As indicated above, all of the IA runoff that flows into South Walnut Creek is ultimately routed to Pond B-5, detained, and sampled prior to being released to lower Walnut Creek. There is no source of IA runoff to South Walnut Creek that can enter lower Walnut Creek without first passing through the pond system for subsequent batch discharge from Pond B-5.

A.2 Data Types, Frequency, and Collection Protocols

The following tables detail the proposed sampling scope.

Table A - 1. Sampling Locations.

ID Code	Location	Location Type
B5	Pond B-5 predischarge sampling locatio	surface water
GS10	RFCA Point of Evaluation 35 feet upstre B-1 Bypass	surface water; sediment
TBD(1)	Functional Channel 4 at outfall of engine wetland at former B991 area	surface water; sediment
TBD(2)	Functional Channel 5 at confluence with Functional Channel 4	surface water; sediment
TBD(3)	Functional Channel 4 at inflow to engine wetland at former B991 area	surface water; sediment

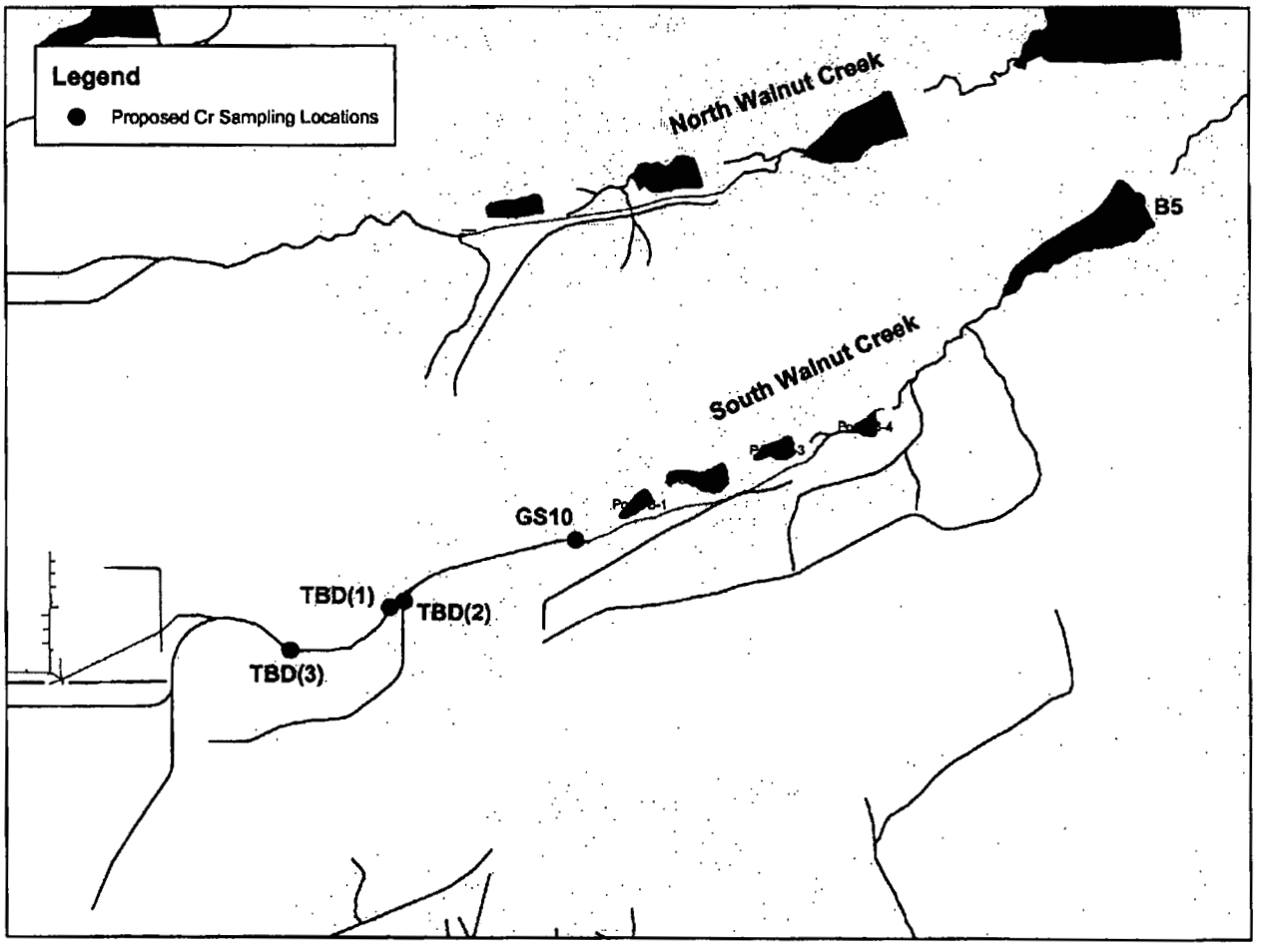

Figure A - 2. Map Showing Proposed Sampling Locations.

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Table A - 2. Sample Collection Protocols.

ID Co	Sample Types	Analytes
B5	surface water: • (1) filtered grab with duplica • (1) unfiltered grab	surface water: • Cr VI dissolved (filtered sample with duplicate) • Total Cr (unfiltered sample)
GS10	surface water: • (1) filtered grab with duplica • (1) unfiltered grab sediment: (1) grab	surface water: • Cr VI dissolved (filtered sample with duplicate) • Total Cr (unfiltered sample) sediment: • Total Cr
TBD(1)	surface water: • (1) filtered grab with duplica • (1) unfiltered grab sediment: (1) grab	surface water: • Cr VI dissolved (filtered sample with duplicate) • Total Cr (unfiltered sample) sediment: • Total Cr
TBD(2)	surface water: • (1) filtered grab with duplica • (1) unfiltered grab sediment: (1) grab	surface water: • Cr VI dissolved (filtered sample with duplicate) • Total Cr (unfiltered sample) sediment: • Total Cr
TBD(3)	surface water: • (1) filtered grab with duplica • (1) unfiltered grab sediment: (1) grab	surface water: • Cr VI dissolved (filtered sample with duplicate) • Total Cr (unfiltered sample) sediment: • Total Cr

Data Evaluation

No specific data analysis is specified. Data will be used for initial characterization purposes in consideration of dissolved/total fractions, speciation, and applicable water-quality standards.

10/10